Methods and Technologies of Data Processing in Heterogeneous Computing Environments

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The experiments at the Large Hadron Collider (LHC) at CERN (Geneva, Switzerland) played a leading role in scientific research. Data processing and analysis is carried out using high-performance complexes (Grid), academic, national and commercial resources of cloud computing, supercomputers and other resources. JINR is actively involved in the integration of distributed heterogeneous resources and the development of Big data technologies to provide modern large scale projects. JINR is actively working on the construction of a unique NICA accelerator complex, which requires new approaches to the implementation of distributed infrastructure for processing and analysis of experimental data.

The report provides an overview of methods and technologies for the development of a global computer infrastructure for storing, processing and analyzing experimental data at large scientific facilities (LHC, NICA, JUNO, neutrino program, etc.).

A brief overview of the projects in the field of the development of distributed computations performed by LIT in Russia, CERN, the USA, Europe, China, JINR Member States of JINR.